



# Resignation Calls, Reallocations and Individual Ministerial Terminations in Latin America

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Artwork by DALL·E, inspired by Matisse

# Introduction

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# Introduction

Our research question is: **How do resignation calls affect cabinet reallocations and dismissals of ministers in Latin American presidential democracies?**

We use a combination of a presidential **protection policy** and a **dismissal rule**: The president protects ministers subjected to a first questioning but, because they are then contaminated, the probability of ministerial termination increases as from a second call for their resignation.

- Archival review of press reports in 12 LA countries (1976-2021), compiling a dataset on ministerial turnover and resignation calls.
- Data mining (OCR) and machine learning and then a semiparametric approach of competing risks and PS matching.

## Theory and Empirical Expectations

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## Protection Policy and Dismissal Rule

To limit agency problems, the president could apply a combination of protection policy and a dismissal rule, borrowed from the rules modelled for parliamentary systems by Dewan and Myatt (2007, 2010; see also Berlinski et al., 2010).

The protection policy considers that ministers can be: (1) **tainted** by having been affected by a scandal or (2) have a record **clean of questioning**.

- If a tainted minister is again affected by a scandal, dismissal should be highly probable (limiting moral hazard).
- A minister with a clean record should be protected by the principal to encourage political activism (limiting agency loss).

## Protection Policy Expectation

The first resignation call should serve as a warning for the minister to improve their performance rather than as an immediate threat to their position. This protection policy should have two outcomes: the retention of the questioned ministers or their reallocation to a different portfolio.

Thus, our first hypothesis is:

- **Protection Policy Hypothesis.** The first call for a minister's resignation raises the probability of reallocation, but not of individual terminations.

## **Dismissal Rule Expectation**

If ministers whose resignation has already been called for are involved in a new scandal, the president could activate the dismissal rule.

The dismissal of a tainted minister could operate as a positive signal in the chain of delegation between voters and the president ([Dewan and Dowding, 2005](#)). In addition, dismissing tainted ministers could be a way to limit moral hazard by demonstrating that officeholders' actions are not insulated from negative consequences. Accordingly, our empirical expectation is:

- **Dismissal Rule Hypothesis.** The second and subsequent calls for a minister's resignation raise the probability of individual terminations, but not of reallocations.

# Presidential Settings

Considering the literature on cabinet reshuffles and a number of institutional features of presidential systems, we focus on tainted ministers and test the dismissal rule under specific conditions (**moderation analysis**):

- Presidential Re-Election
- Presidential Leverage
- Fragmented Opposition
- Government Performance

## Empirical Strategy

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## Cases and Data Gathering

We analyse the effect of resignation calls on reallocations and individual ministerial terminations in 12 Latin American countries from their redemocratisation to the present.

We combined the Tesseract Optical Character Recognition (**OCR**; see [Ooms, 2021](#)) with different **semisupervised machine learning models** to distinguish between resignation calls and other mentions of cabinet members in the press. This was applied to **46 years** of **Latin American Weekly Report (LAWR) archives**.



# Tesseract Optical Character Recognition



## How Domingo Cavallo rose to become Menem's virtual prime minister

Argentina are still hotly debating what lay behind the sudden resignations of President Raúl Alfonsín and his replacement, Domingo Cavallo. His rapid, uncontrolled uprising of the dollar rate – dismissed as suffi-

cient reason for his ouster – has been published about all sorts of political plots. One that seems to stand up is Cavallo's desire to become Menem's virtual prime minister. In this scenario, all González had to do was to count on unquestioning support from the Bush administration.

This, at a time when even such highly placed members of his government, Vice-President Eduardo Duhalde and Finance Minister, in the manoeuvring to engineer Menem's departure from the Presidency, had been told that he had been informed by which of the many constitutional succession procedures would find most favour.

Many expect Cavallo to push for an agreement with the main opposition party, Raúl Alfonsín's Unión Democrática (UD), and the Justicialists (JC), in some form of coalition that would ensure the continuity of the government, to provide over a period of months, a smooth transition for prominent politicians and businessmen, and even US diplomats, have been expecting since late 1990. ■

INSIDE	
PERU: Wildlife spread of cholera epidemic. (8)	VENEZUELA: Lower prices force budget cutback. (8) BOLIVIA: A Soviet partner ends its existence? (2) PARAGUAY: Economic crisis on democracy. (4) COSTA RICA: Preparing a new batch in case. (11)
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## How Domingo Cavallo rose to become Menem's virtual prime minister

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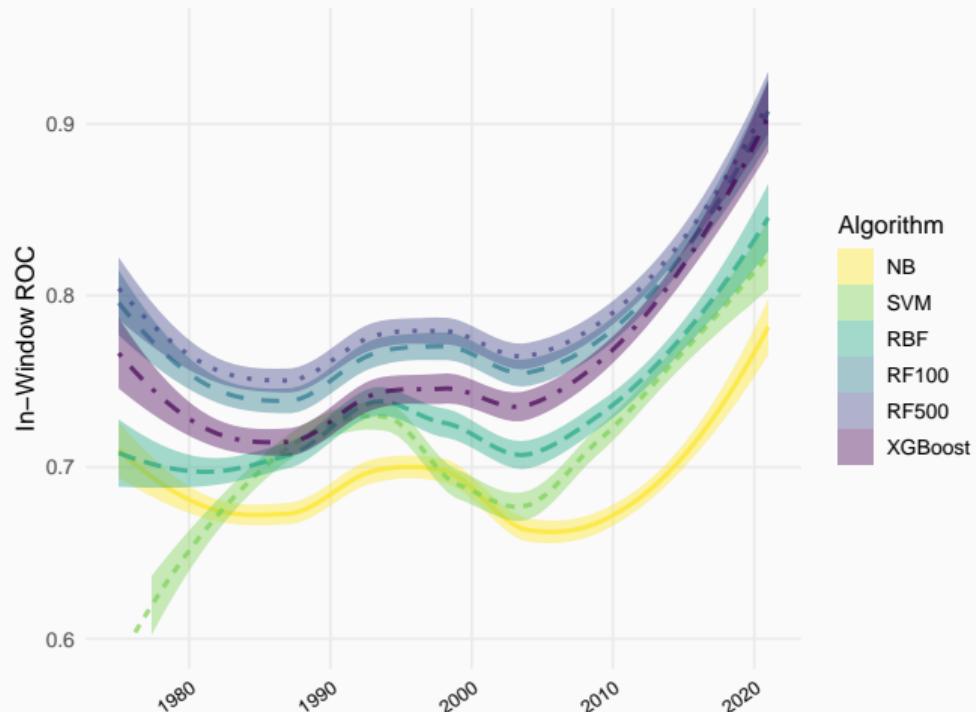
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# Goodness-of-Prediction of Semisupervised Models (1975-2021)

Following Greene et al. (2019), we trained semisupervised models using a **five-year fixed rolling window** from 1975 to 2021 to train algorithms and predict resignation calls.

Random Forest classifiers with 500 trees 10-fold cross-validated.



## Time-Dependent Data Encoding

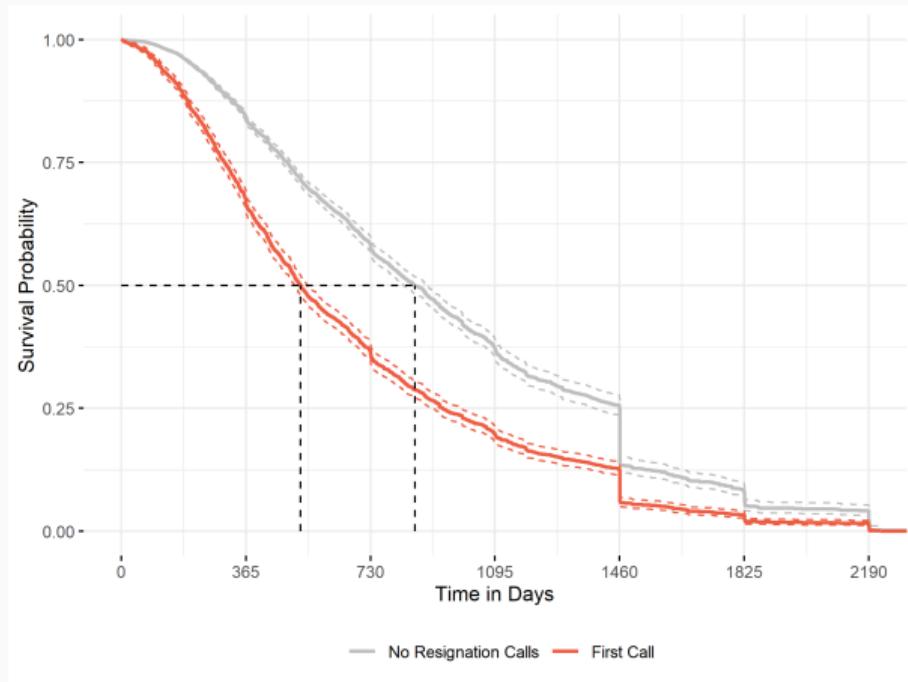
The dataset was **time-dependent encoded** using monthly intervals with the (start, stop] model (Therneau et al., 2020). This allowed us to incorporate **time-varying covariates**.

We observe the time events  $T$  considering monthly intervals and  $k$ -th **competing risks**  $Y_{k[i]}$  for **reallocations** ( $k = 1$ ) and **individual ministerial terminations** ( $k = 2$ ) by constructing the monthly intervals  $Z(t) = I(t > Y_{k[i]})$ .

We then used the closed interval of  $i$ -th observations (officeholders) as an endpoint in a function for multi-state survival variables obtaining an outcome dataset to control competing risks with **Fine-Gray weights** (Fine and Gray, 1999; Therneau et al., 2022).

# Kaplan-Meier Nonparametric Estimation

The function  $F(t) = 1 - S(t) = \Pr(T \leq t)$  shows the median **survival for ministerial turnover**, considering reallocations and individual ministerial terminations and the first resignation call over the period  $T$ .



## Propensity Score Matching

To apply PS matching to control the problem of non-random selection in our data, we adopted the approach of [Austin and Fine \(2019\)](#). This consists in estimating a standard PS by regressing the variable of interest (resignation calls  $D_{j[i]}$ ) on a vector of covariates and using **greedy nearest neighbour matching** (NNM) with replacement to match treated observations ( $D_{j[i]} = 1$ ) to the control observations ( $D_{j[i]} = 0$ ), reusing the control observations.

NNM is one of the most used matching techniques and fits with [Austin and Fine's \(2019\)](#) semiparametric survival approach.

# Propensity Score Matching

We distinguish  $D_{j[i]}$  as **1st resignation call** ( $j = 1$ ) and the **2nd or subsequent ones** ( $j = 2$ ). Consequently, we regress  $D_{j[i]}$  on a vector of covariates and potential confounders  $X_{m[i]}$  that considers quadratic presidential term patterns dummies and type of ministry, using probit models. We also incorporated country FE and Fine-Gray weights  $w_1$ . This is our **naive propensity score estimation**:

$$D_{j[i]} = \varphi \left[ \alpha + \sum_{m=1}^M \gamma_m w_{1[i]} X_{m[i]} + \zeta w_{1[i]} \text{country}_i + \varepsilon_i \right] \quad (1)$$

# Propensity Score Matching

Then, we expanded our PS estimation by incorporating **additional confounders** to  $X_{m[i]}$  to **block the backdoor path**. We favour the incorporation of covariates that can affect the presidential decision to protect or dismiss a minister:

- Presidential leverage (control of the relevant Houses)
- Opposition fragmentation\*
- Government fragmentation\*
- Government type (single-party vs. coalition)
- Presidential re-election
- Cumulative level of resignation calls\*\*

\* probability that two randomly selected deputies belong to different parties.

\*\* to improve precision since it could be a competing exposure rather than a confounder.

## Competing Risks Models

After matching, the outcome analyses were carried out in the different matched samples with Fine-Gray subdistribution hazard models to estimate the **ATT for observational studies**, that is, the effect on ministers who received resignation calls.

We used **Fine-Gray models derived** from weighted **non-proportional hazards** models with a baseline  $\lambda_0(t)$  from the proportional hazards, incorporating the  $Z(t)$  intervals for multiple observations as clusters ([Therneau et al., 2022](#)). The models regressed  $Y_{k[i]}$ , where  $k = 1$  for **reallocations** and  $k = 2$  for **dismissals**, on resignation calls indicators  $D_{j[i]}$ , using PS weights  $w_2$ :

$$\lambda_k(t_i) = \lambda_{0[k]}(t_i) \exp [\beta_t w_{2[i]} Z_i(t) + \beta w_{2[i]} D_{j[i]} + \varepsilon_i] \quad (2)$$

## Results

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# Estimating the Protection Policy

	Reallocations		Ind. Terminations	
	Model I	Model II	Model III	Model IV
First Resignation Call	2.066* (1.059)	3.567*** (1.071)	1.029*** (0.268)	1.068*** (0.366)
Matching	NNM	NNM	NNM	NNM
Estimand	ATT	ATT	ATT	ATT
Competing Risk	Ind. Term.	Ind. Term.	Realloc.	Realloc.
PS Weights	Fine-Gray	Fine-Gray	Fine-Gray	Fine-Gray
Weights Outcome	No	PS	No	PS
Control of Houses	No	PS	No	PS
Opp. Fragmentation	No	PS	No	PS
Gov. Fragmentation	No	PS	No	PS
Type of Government	No	PS	No	PS
Re-Election Permitted	No	PS	No	PS
Cumulative Gov. Calls	No	PS	No	PS
Quadratic Term Patterns	PS	PS	PS	PS
Type of Ministry	PS	PS	PS	PS
Country FE	PS	PS	PS	PS
Obs. Clustering	PS/Yes	PS/Yes	PS/Yes	PS/Yes
Log-Rank	5.353**	5.756**	15.379***	12.270***
AIC	143.040	125.661	1,116.336	1,003.857
C-Index	0.683	0.711	0.605	0.606
N	14,418	14,367	10,737	8,455
Log Likelihood	-70.520	-61.831	-557.168	-500.928

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

We reject the **Protection Policy Hypothesis** as there is no evidence to suggest that the first call alone increases the probability of a minister being repositioned.

Although we reject this hypothesis, we found (novel empirical) evidence that reallocations and individual terminations are competing risks at the early stage of public questioning.

# Estimating the Dismissal Rule

Model IV with the block of confounders has an estimated ATT of 2.258. This implies the risk of a minister's removal increases more than nine-fold.

These results confirm the **Dismissal Rule Hypothesis**.

	Reallocations		Ind. Terminations	
	Model I	Model II	Model III	Model IV
Second or Subsequent Resignation Calls	1.005 (0.613)	-1.117 (1.043)	1.390*** (0.250)	2.258*** (0.249)
Matching	NNM	NNM	NNM	NNM
Estimand	ATT	ATT	ATT	ATT
Competing Risk	Ind. Term.	Ind. Term.	Realloc.	Realloc.
PS Weights	Fine-Gray	Fine-Gray	Fine-Gray	Fine-Gray
Weights Outcome	No	PS	No	PS
Control of Houses	No	PS	No	PS
Opp. Fragmentation	No	PS	No	PS
Gov. Fragmentation	No	PS	No	PS
Type of Government	No	PS	No	PS
Re-Election Permitted	No	PS	No	PS
Cumulative Gov. Calls	No	PS	No	PS
Quadratic Term Patterns	PS	PS	PS	PS
Type of Ministry	PS	PS	PS	PS
Country FE	PS	PS	PS	PS
Obs. Clustering	PS/Yes	PS/Yes	PS/Yes	PS/Yes
Log-Rank	2.978*	17.026***	35.838***	54.015***
AIC	573.545	897.601	4,488.856	4,282.437
C-Index	0.562	0.609	0.577	0.602
N	40,846	41,766	27,504	27,852
Log Likelihood	-285.773	-447.801	-2,243.428	-2,140.218

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

# Moderation Analysis in Presidential Settings

	Ind. Terminations			
	Model I	Model II	Model III	Model IV
Second or Subsequent Resignation Calls	2.105*** (0.232)	2.058*** (0.278)	-0.461 (0.842)	2.034*** (0.221)
Matching Estimand	NNM ATT	NNM ATT	NNM ATT	NNM ATT
Competing Risk PS Weights	Realloc. Fine-Gray	Realloc. Fine-Gray	Realloc. Fine-Gray	Realloc. Fine-Gray
Weights Outcome	PS	PS	PS	PS
Control of Houses	PS	MOD	PS	PS
Opp. Fragmentation	PS	PS	MOD	PS
Gov. Fragmentation	PS	PS	PS	PS
Type of Government	PS	PS	PS	PS
Re-Election Permitted	MOD	PS	PS	PS
Cumulative Gov. Calls	PS	PS	PS	MOD
Quadratic Term Patterns	PS	PS	PS	PS
Type of Ministry	PS	PS	PS	PS
Country FE	PS	PS	PS	PS
Obs. Clustering	PS/Yes	PS/Yes	PS/Yes	PS/Yes
Log-Rank	61.130***	48.611***	17.929***	58.749***
AIC	4,347.741	4,308.576	6,671.682	4,359.918
C-Index	0.612	0.597	0.575	0.610
N	28,432	27,867	28,398	28,432
Log Likelihood	-2,172.870	-2,153.288	-3,334.841	-2,178.959

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$

When performing a moderation analysis incorporating **opposition fragmentation** the effect is not significant ( $p = 0.584$ ).

This suggests that the government may be more resilient to opposition pressure when this is highly fragmented and does not have a cohesive strategy.

## Robustness Checks

Our robustness checks using **additional confounders**, an **alternative matching algorithm** (caliper) and a **special standard error estimator** (Austin and Cafri, 2020) show the same patterns as our main analyses.

When incorporating macroeconomic indicators, presidential approval and controlling for low levels of freedom of speech as potential confounders, the results were not altered (**low residual confounding**).

The exclusion of these **stochastic events** was made because we gave priority to the use of **resignation calls** as a noisy but empirically efficient indicator.

## Discussion

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## Discussion: Main Results

We reject our **Protection Policy Hypothesis**. This would imply that a substitution effect moderating the behaviour of risk-exposed ministers is not generated and, at the same time, individual ministerial performance is not incentivised.

The risk of removal increases more than ninefold as from the second call and we, therefore, accept our **Dismissal Rule Hypothesis**. Although this could limit moral hazard, this higher risk of removal, together with the absence of a consistent protection policy, could increase agency loss and undermine ministerial performance.

## Discussion: Moderation and Robustness Checks

We also found evidence of moderation under conditions of **fragmentation of the opposition**. Thus, when the opposition is highly fragmented and not cohesive, the effect of the second and subsequent calls for ministers' resignation on the probability of individual terminations is weaker.

Several concerns related to **residual confounding** were reviewed in the robustness checks by incorporating **macroeconomic and presidential approval indicators**. These were not included in the main analyses since it is argued that resignation calls are noisy indicators that operate as proxies for stochastic events affecting ministerial stability.

# Acknowledgements

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# Thank you very much!



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